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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/531,113

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EXAMINER

ZHENG, LOIS L

ART UNIT

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/531,113	<b>Applicant(s)</b> GIORDANI ET AL.	
	<b>Examiner</b> LOIS ZHENG	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 18-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Status of Claims***

1. Claims 18, 26, 30, 32 and 35 are amended in view of applicant's amendment filed 26 May 2009. New claim 36 is added. Therefore, claims 18-36 are currently under examination.

### ***Status of Previous Objections***

2. The objection to claim 35 is withdrawn in view of applicant's amendment filed 26 May 2009.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 18-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bianchi US 5,908,511(Bianchi) in view of Lee US 6,361,613 B2(Lee) as evidenced by Kool et al. US 6,833,328(Kool), and further in view of Fortunati et al. US 6,565,735 B1(Fortunati).

Bianchi teaches a steel pickling solution comprising at least 150g/l of sulfuric acid, at least 40g/l of hydrofluoric acid, at least 15g/l of ferric ions, and 1-20g/l of hydrogen peroxide stabilizer(col. 3 lines 27-60 and col. 4 lines 13-19).

However, Bianchi does not explicitly teach the claimed complex fluoro acids of Si and/or anions thereof. Bianchi also does not explicitly teach the claimed chloride ions and/or hydrochloric acid.

Lee teaches a steel pickling solution comprising nitrate and fluorides instead of nitric acid and hydrofluoric acid(abstract). Lee further teaches that its pickling solution does not produce hazardous nitrogen oxides or hydrofluoric acid fumes(col. 6 lines 38-42), is less corrosive and has superior pickling effects than nitric and hydrofluoric acid containing pickling solutions(col. The fluorides in the pickling solution of Lee are complex fluorides that contains fluorosilicate(col. 7 lines 3-9). In Example 1, Lee discloses a pickling solution with 33g/l of fluoride(col. 9 lines 32-34). In Example 4, Lee further discloses a suitable amount of fluoride ranges 50-70g/l(col. 16 lines 1-3).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated 50-70g/l of complex fluoride such as fluorosilicate as taught by Lee into the pickling solution of Bianchi to substitute hydrofluoric acid in the pickling solution of Bianchi in order to improve pickling effects of the solution without producing hazardous hydrofluoric acid fume as taught by Lee. Furthermore, since the fluorosilicate salts such as sodium fluorosilicate as taught by Lee is the source for fluorosilicic acid as evidenced by Kool(col. 3 lines 22-28), the examiner concludes that the pickling solution of Bianchi in view of Lee contains the complex fluoro acids of Si as claimed.

Fortunati teaches a steel pickling solution comprising sulfuric acid, ferric ions, hydrofluoric acid and hydrogen peroxide(col. 5 lines 5 lines 8-25, col. 5 line 62 – col. 6

Art Unit: 1793

line 8). Fortunati further teaches that adding chloride ions in a concentration of 1-20g/l to the pickling solution increases the pickling kinetics (col. 6 lines 9-15).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated 1-20g/l of chloride ions as taught by Fortunati to the pickling solution of Bianchi in view of Lee in order to increase the pickling kinetics as taught by Fortunati.

Regarding claims 18-19 and 21, the components in the pickling solution of Bianchi in view of Lee and Fortunati have concentrations that overlap the claimed pickling solution component concentrations. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed component concentration ranges from the disclosed ranges of Bianchi in view of Lee and Fortunati would have been obvious to one skilled in the art since Bianchi in view of Lee and Fortunati teach the same utilities in their disclosed component concentration ranges.

In addition, since the pickling solution of Bianchi in view of Lee and Fortunati comprises complex fluoride such as fluorosilicate instead of hydrofluoric acid, the examiner concludes that the pickling solution of Bianchi in view of Lee and Fortunati would contain less than 10g/l of free fluoride ions and/or free hydrofluoric acid as claimed.

Regarding claim 20, Bianchi further teaches that the redox potential of the pickling solution is 250-800mV (col. 5 lines 32-41).

Regarding claim 22, Bianchi further teaches that the pickling solution further comprises organic material such as non-ionic surfactants acting as wetting agents, emulsifiers, etc(col. 5 lines 53-62). Therefore, the pickling solution of Bianchi in view of

Art Unit: 1793

Lee and Fortunati can be a gel or a pasted based on the broadest reasonable interpretation.

Regarding claim 23, Bianchi teaches a pickling process comprising the claimed steps of contacting the steel surface with its pickling solution for a duration sufficient to completely de-scale the steel surface and management of the redox potential in within the claimed range(col. 5 lines 20-41).

Regarding claim 24, Bianchi teaches the claimed movement of the picking solution(col. 4 lines 28-37).

Regarding claim 25, Bianchi teaches the claimed oxidization of iron (II) ions to iron(III) ions(col. 3 lines 53-60).

Regarding claims 26-31, the instant claims are rejected for the same reasons as set forth in the rejection of claims 18-21 and 23-31 above.

Regarding claims 32 and 36, the instant claim is mostly rejected for the same reasons as set forth in the rejection of claims 18-21 and 23-31 above. In addition, Bianchi teaches the claimed subsequent rinsing of the pickled steel surface(col. 7 lines 53-54). Furthermore, the fluoride concentration of 33g/l(i.e. fluorosilicate concentration) as taught by Example 1 of Lee, when incorporated into Bianchi, is very close to the claimed upper complex fluoro acids of Si concentration of 220mmole/liter. It is well settled that a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). See MPEP 2144.05.

Regarding claim 34, Fortunati further teaches different sulfuric acid concentration in the pickling solution for different types of stainless steels(col. 5 line 65 - col. 6 line 2). Therefore, it would have been obvious to one of ordinary skill in the art to have varied the concentration of sulfuric acid in the pickling solution of Bianchi in view of Lee and Fortunati via routine optimization in order to produce optimum pickling result for desired type of stainless steel surface.

Regarding claims 33 and 35, the instant claims are rejected for the same reasons as set forth in the rejection of claim 18 and 26 above.

### ***Response to Arguments***

5. Applicant's arguments filed 26 May 2009 have been considered, but they are not persuasive.

In the remarks, applicant argues that the combination of references in the rejection ground does not teach the claimed fluoro acids of Si. Instead, the combination of references teaches using fluorosilicate salts.

The examiner does not find applicant's argument persuasive because the fluorosilicate salts such as sodium fluorosilicate as taught by Lee is a precursor for the claimed fluorosilicic acid and will provide fluorosilicic acid after being introduced into the pickling solution as evidenced by Kool(col. 3 lines 22-28).

Applicant further argues that the combined references do not teach the claimed complex fluoroacid amounts of 50-220 and 30-220 mmoles/liter as recited in claims 32 and 36.

Applicant's argument is not persuasive for the same reason set forth in the rejection of claims 32 and 36 above.

***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Eberhardt et al. US 6,194,369 teach a pickling solution for aluminum steel composite material, wherein the pickling solution comprises sulfuric acid, hexafluorosilicic acid and Fe(III) ions.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.



Any inquiry concerning this communication or earlier communications from the examiner should be directed to LOIS ZHENG whose telephone number is (571)272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/  
Supervisory Patent Examiner, Art  
Unit 1793

LLZ